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portunity for the admission of light, air, and moisture sufficient for the further growth and development of the cells. Division then taking place in the only direction possible from the shape of the enclosed space, a row of cells is formed which resembles in a marked manner filaments of Oscillaria.

This form of growth then affords a striking illustration of the effect of outward mechanical conditions by the modification into a filament, of cells which under normal conditions exist in simple masses or groups.— JOSEPHINE E. TILDEN, *Botanical Laboratory, University of Minnesota.*

EXPLANATION OF PLATE XXX.—Fig. 1, portions of a gill. Only one lobe is figured, the shape of the other being indicated by dotted lines. ×84.—Fig. 2, one of the hairs from the gill. ×450.—Fig. 3, an antenna. ×450.

Northwestern notes.—**Lathyrus pauciflorus**, n. sp.—Rather slender, two feet or more high: stipules broadly lanceolate and halberd shaped, an inch or more long, a third as wide, acuminate above, acute or obtuse below, usually coarsely toothed; leaflets three to six pairs, thickish, oblong-lanceolate or ovate-oblong, strongly apiculate, almost sessile, one or 1½ inches long: peduncles as long as or longer than the leaves, 3- or 4-flowered: flowers purple, an inch long; calyx teeth ciliate, the middle triangular-lanceolate ones twice as long as the upper triangular ones and two thirds as long as the lower lanceolate tooth; pods not seen.—Collected at Roseburg, Oregon, by Thomas Howell, June, 1887 (no. 677); at Wawawai, Washington, by Lake and Hull, June, 1892 (no. 810); and at Snake River Cañon, Washington, by C. V. Piper, May 27, 1893 (no. 1,487). This species has been confused with *L. polyphyllus* Nutt. from which it is distinguished by its few large flowers, fewer thickish leaves, and narrower stipules.

ROSA NUTKANA Presl, var. **hispida**, n. var.—A form of *R. Nutkana* made conspicuous by its strongly glandular, hispid receptacle and glandular calyx, though not otherwise differing from the type.—Collected at Rock Creek, Montana, by Dr. Watson, July 27, 1880 (no. 124); and at Pullman, Washington, by C. V. Piper, June and Sept., 1893 (no. 1,540).

Calochortus pavonaceus, n. sp.—Stems 10–20 inches high, from a small bulbous base, with a bract in the middle an inch or two long: leaves two-thirds as long as the stem, three or four lines wide, strongly involute in the dried specimens: the 1–4-flowered umbel subtended by as many unequal bracts, the longest rather longer than the pedicels; at least one of the pedicels becoming three inches long: sepals ovate-lanceolate, acuminate, glabrous, 1–1½ inches long, strongly flecked with violet within, the thin scarious margin almost transparent: petals cuneate-obovate, 1¼–1¾ inches long, the margin dentate and long ciliate, tending to become erose at the tip, violet above, yellowish below, with dark markings like the eye of a peacock's feather; gland small, covered with matted yellow hairs, bordered by longer ones, like those on the margin of the petal: anthers oblong, four lines in length, scarcely shorter than the broad-winged filaments: capsule broady elliptic to nearly orbicular, an inch long, with a short, stout beak.—Collected at Pullman, Whitman Co., Washington, by L. F. Henderson, June, 1892 (no. 2,484); and by C. V. Piper, 1893 (no. 1,680); and at Union Flat, Whitman Co., by Lake and Hull, July, 1892 (no. 618). A species near *C. nitidus* Dougl., but well distinguished by its colored petals, and relatively long anthers and short filaments. Mr. Piper's no. 1,681, from Pullman, seems to be *Calochortus macrocarpus* Dougl., though the petals are white, with or without blue markings at their bases. — MERRITT LYNDON FERNALD, *Gray Herbarium, Cambridge, Mass.*

Cross fertilization of petunias.—This series of experiments in cross fertilizing the ordinary purple petunia, were continued until the third generation was obtained. The same precautions against accidental fertilization were used, as described in the previous notes published in this magazine for October, 1892.

The results obtained from the last generation were somewhat more conclusive than from the first, as would naturally be expected, yet the variation in this case was no more than would usually occur in three generations.

The variegated varieties showed the same lack of vitality and productiveness, throughout all the generations. The plants were smaller, weaker, and much less productive than the plain purple in almost every case; but a few plants which seemed as large and as vigorous as the average purple ones bloomed less freely; only a few of these blossoms produced seed capsules, which were always smaller.

The seeds obtained from the first year's experiments were all planted the same day, under exactly the same conditions and their germination was carefully watched and noted every day. No. 1 (self-fertilized), no. 2 (fertilized from a different flower on the same plant), and no. 3 (cross fertilized), were all sowed in the same box with only a thin board partition between, so that there could not have been the slightest difference in their conditions while germinating.

The variegated variety germinated more slowly and less vigorously than the purple; while many of the seeds failed to germinate at all.

On the seventh day a large percentage of no. 3 appeared above ground, while but four of no. 1, and none of no. 2 were up yet. On